varies from about fifty cents a week for a two-weeks-old baby to a dollar and seventy-five cents a week for an eight-months-old baby.

Certain precautions are necessary in the use of modified milk, whether prepared at the laboratory or at home. It should be kept on ice. It must be warmed in the bottle. It must never be poured out to be warmed. The bottle is to be placed upright, with the cotton still in it, in a dish of cool water, the water outside being level with the milk in the bottle, then heated until the thermometer in the milk reaches 100° F., the proper temperature for the baby's food. When the milk is warm the nipple is to be put directly on the bottle. A knitted cover helps to keep the milk warm while the baby nurses. If the baby does not take all the food at a feeding, the residue is to be thrown away and a fresh bottle used next time. The same bottle of milk must never be used twice. The nipples should be washed thoroughly after each feeding and kept in soda and water. It is advisable to boil them at least once a day. The infant should have nothing besides the modified milk, except water which has been boiled and cooled. It may have an unlimited amount of that.

THE DISCUSSION ON TUBERCULOSIS

By RUTH BREWSTER SHERMAN
Graduate Nurse of the Johns Hopkins Hospital

THE interest which every nurse has felt in the September meeting of the Congress of Nurses should not in any degree draw her attention from an event which has recently startled the medical world.

The International Congress on Tuberculosis assembled in August in London, and before that profound body of distinguished men Dr. Koch, whose name is synonymous with the struggle against the most prevalent disease in the world, announced that his researches had led him to the conclusion that the tubercle bacillus of cattle is not identical with that of man, and that, consequently, the contracting of tuberculosis by the use of meat and milk from infected animals is not probable.

Lord Lister and the great body of American, English, and European scientists absolutely oppose this view, so contradictory to the practical experience and the best teaching for years past. The warning against tubercular meat and milk has been heard in every medical lecture and read in every medical book since Villemin's famous researches in 1865, and no other event has given such an impetus to opinion as Koch's own isolation of the tubercle bacillus in 1882. Urged by the physicians

and Boards of Health, nearly if not all civilized countries have instituted rigorous systems of cattle examination, complicated and expensive machinery for the inspection of meat and milk, and radical measures for the control and prevention of bovine tuberculosis. One has only to read the strict importation laws of the United States, and the careful cattle legislation of many of our individual States, to realize what earnest efforts have been made to protect human life from danger from this source. Individuals and organizations have lent their aid and hearty co-operation, even when the discovery of the tubercle in tested cattle involved much trouble and great money loss.

And now, with the work of control at this stage, the most eminent living bacteriologist declares himself convinced that for human welfare this is not necessary. His conclusion is founded on unsuccessful attempts to transfer the disease from men to animals by inoculation, the reverse operation being, of course, impossible. This conclusion is opposed by his brother-scientists, who are by no means ready to accept a reversal of the clinical experience and medical teachings of past years. So strong is this feeling, that the Congress passed a resolution urging the continuance of every effort against the sale or use of infected meat and milk, and recommending that the government institute a rigid inquiry into the identity of human and bovine tuberculosis. Accounts of the discussion were published in many papers, and comments on Dr. Koch were numerous, prominent among them being the reminder that tuberculin has proved to be of merely diagnostic, and not, as was at first hoped, of curative value. This is manifestly unfair, since he only acted as he was bound to do in making public a method which he believed to be beneficial to humanity, and never confidently asserted it to be a remedy.

The publicity and importance of these proceedings are a gratification to one considerable body of public men. Scientific cattle-breeders, importers of fine stock, and professional dairymen, while joining earnestly in the crusade against bovine tuberculosis, and admitting the *undesirability* of bacilli in animals or animal products, have not generally believed in any real danger to persons consuming them. Troublesome and expensive experiments in stabling, feeding, isolation, infection, and tuberculin injection have been carried on in several States to determine the extent and danger of contamination from cow to cow or herd to herd, but though guinea-pigs exposed to companionship with the cattle during experimentation have contracted the disease and died from it, it has not yet been proved that the persons concerned in their care have received injury, while another large part of their argument is based on the conditions existing in the Island of Jersey. This small, very popu-

lous island is largely filled with consumptive patients who live there for their health; it is also filled with herds of cattle which, during the period of one hundred and twenty-five years that importation of new stock has been forbidden by law, have been absolutely free from tuberculosis; yet which, when removed to other countries and exposed to contact with other cattle, prove more susceptible than any other breed to this particular scourge. Breeders claim the logical conclusion to be: that the cattle do not contract the disease from men, that the bacilli destroying the human lung do not attack and live in the bovine lung, and that, consequently, the one which does live in and destroy the bovine lung cannot reasonably be believed to be the one injuring the human lung. I can say from experience that a nurse whose life takes her among professional stock- and dairy-men will be called on to defend, often and strenuously, the teachings of her hospital concerning tubercular meat and milk, and that one so placed cannot do better than to get the free publications of the National and State Departments of Agriculture and study the question on its own ground. These views are held by many eminent veterinarians in America and also by Professor Bang, of Denmark, a veterinarian whose specialty is tuberculosis of cattle and whose international reputation in his own line is almost as great as Koch's.

From this discussion and its possible results two grave responsibilities arise to face a nurse. The first is, clearly and emphatically, our duty to continue every care and precaution which we have been taught until the new doctrine shall have been proved and approved by years of experience and experiment and the leading medical schools shall have altered their teachings. While tuberculosis kills more victims than any other disease and one-fourth the entire number, while sixty thousand persons die of it yearly in Great Britain and eight thousand yearly in New York City alone, while homes are broken up and human lives altered daily by this one dread enemy, no conscientious woman will consent to leave a *possibility* open for the spread of its infection, nor shall we have any right to do so until the hospitals which trained us have openly changed their policy.

The second is, in case this ever takes place, and even if it does not, the increase of every possible care of the personal hygiene of consumptive persons. This new view cannot remove an old danger to ease our work for us,—it can only show that this particular danger never existed; and if this is true, all the terrible spread and virulence of tuberculosis depends simply on communication from person to person. We will have fewer avenues of infection to watch, so will have to guard them far more closely; for if the chances are decreased by half, the responsibility is

more than doubled, since the closer we can lay our hands on the point of evil, the more blame to us if we fail to grasp it firmly. If this wide channel which has hitherto been supposed to be the means of infection of thousands of persons yearly is closed, the remaining modes of contagion will be those personal ones which are much more in the control of every intelligent person, and all the energy which has been turned in the direction of food, instead of falling into inactivity, must be added to that already given to personal hygiene if the final result is to be in proportion to our knowledge. It will argue greater laxity of hygienic living than we will wish to acknowledge if it can ever be proved that to this cause alone is due the tremendous prevalence of tuberculosis, which we have hitherto believed to be partly caused by a means so hard to control as the food-supply. Everyone interested in the strife will draw inspiration from Lord Lansdowne's words at the opening of the Congress, "The foe in this case is more dread than war, and the possible victory of science more glorious than any yet won on field of battle."

REFERENCES.

"Tuberculosis," Hillier.

"Transactions New York State Agricultural Society, 1899-1900."

"Tuberculosis of Cattle," Pearson, Ravenel, and Bang, State Department of Agriculture, Pennsylvania, 1901.

"Repression of Tuberculosis of Cattle by Sanitation," Pearson, 1901.

"Legislation with Reference to Bovine Tuberculosis," Salmon, United States Department of Agriculture, 1901.

"Report of Tenement-House Commission," New York, 1901.

The Country Gentleman and other current newspapers.

METHOD OF MASSAGE OF THE SCALP

By KATE W. WILLIAMS

Illinois Training-School for Nurses, Chicago

Without undervaluing the benefit to be derived from an intelligent treatment of the head in cases of neurasthenia, massage of the scalp is considered most beneficial in the various neuralgias to which the head is subject. The scalp is not plentifully supplied with muscles, the occipito-frontalis and the temporal being the principal ones.

In the treatment of the scalp we usually consider the sterno-cleido-mastoid and the superior portion of the trapezius, and, in fact, the whole group of muscles attached to the base of the skull.

The arteries are the deep and superficial temporal and their pos-